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EXAMINER	
POWERS, WILLIAM S	

  

ART UNIT	PAPER NUMBER
2134	

  

NOTIFICATION DATE	DELIVERY MODE
06/29/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

**Application No.**

10/736,952

**Applicant(s)**

AURA, ANSSI TUOMAS

**Examiner**

William S. Powers

**Art Unit**

2134

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-86 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

No Information Disclosure Statement was submitted with the application.

### ***Drawings***

1. The drawings are objected to because not all elements in figure 2 have reference numbers. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

2. Claims 41, 81 and 85 are objected to because of the following informalities:
- a. As to claim 41, "a mobile node" in line 3 of the claim seems to refer to "a mobile node" in claim 29, but it is not clear.
  - b. As to claim 81, "purported" in line 5 of the claim should be "purportedly".
  - c. As to claim 85, the limitation "the nonce field" recited in line 2 of the claim lacks antecedent basis.

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15-28, 57-66 86 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are directed to a "program product" not embodied in a tangible medium. This is considered functional descriptive material which is non-statutory.

Claims 77-85 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The data structures are considered non-

functional descriptive material. The claims describe structures that do not exhibit any functionality and as such, do not fall into any of the statutory categories of an invention.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 14-18, 28-34 and 46 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 7,130,614 to Sreemanthula et al. (hereinafter Sreemanthula).

As to claim 1, Sreemanthula teaches:

- a. Attaching a secure router advertisement to an address update associated with a mobile node (data from the router advertisement are attached to the registration request) (Sreemanthula, column 11, line 23-column 12, line 65).
- b. Sending the address update including the attached secure router advertisement to a correspondent node (binding procedure is performed) (Sreemanthula, column 11, line 23-column 12, line 65).

As to claim 2, Sreemanthula teaches the address update includes a Mobile IPv6 compliant binding update (the embodiments of the patent are used in an IPv6 based environment) (Sreemanthula, column 10 lines 1-2).

As to claim 3, Sreemanthula teaches the address update is sent by a node acting as a representative of the mobile node (mobile node is representing itself) (Sreemanthula, column 10 lines 1-2).

As to claim 4, Sreemanthula teaches:

- a. Sending a secure router solicitation to one or more access routers (MN1 sends router solicitation) (Sreemanthula, column 12, lines 1-7).
- b. Receiving the secure router advertisement, responsive to the secure router solicitation (MN1 receives a router advertisement in response to the router solicitation) (Sreemanthula, column 12, lines 1-7).

As to claim 14, Sreemanthula teaches the mobile node is associated with a current address within an access network and the address update specifies the current address of the mobile node (the care of address is used in the binding update to ensure that packets are sent to the mobile node via the care of address (Sreemanthula, column 15, lines 28-46).

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As to claims 15, 16, 17, 18 and 28, the claims are computer program product claims encompassing the limitations of the method claims 1-4 and 14, respectively and are rejected similarly.

As to claims 29 and 30, 31 and 32, 33 and 34, and 46, the claims are system claims encompassing the limitations of the method claims 1 and 2 and 3 and 4 and 14, respectively and are rejected similarly.

6. Claim 77 is rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 7,155,500 to Nikander.

As to claim 77, Nikander teaches:

- a. A first data field storing a home address of a soliciting mobile node (cache with home address of mobile node) (Nikander, column 2, lines 4-23).
- b. A second data field storing a subnet prefix specifying an access network in which the mobile node is located (cache with care-of address) (Nikander, column 2, lines 4-23).

As to claims 78 and 80, Nikander teaches a signature of an access router authorized to advertise the subnet prefix of the access router (Nikander, column 11, lines 40-67).

As to claim 79, Nikander teaches:

- a. A first data field storing a public key of a soliciting mobile (Nikander, column 11, lines 4-67).
- b. A second data field storing a subnet prefix specifying an access network in which the mobile node is located (cache with care-of address) (Nikander, column 2, lines 4-23).

As to claim 81, Nikander teaches:

- a. A first data field storing a purported identifier of a mobile node (home address of mobile node) (Nikander, column 2, lines 4-23).
- b. A second data field storing a current address at which the mobile node is purportedly located (care-of address) (Nikander, column 2, lines 4-23).
- c. A third data field storing a secure router advertisement signed by an access router authorized to advertise the subnet prefix of the access network that includes the purported current address (Nikander, column 11, lines 4-67).

As to claim 82, Nikander teaches the purported identifier is a Mobile IPv6 home address (IPv6 environment) (Nikander, column 8, lines 18-23).

As to claim 83, Nikander teaches the purported current address is a Mobile IPv6 care-of address (IPv6 environment) (Nikander, column 8, lines 18-23).



As to claim 84, Nikander teaches the purported identifier is a public key (Nikander, column 11, lines 4-67).

As to claims 85 and 86, Nikander teaches the secure router advertisement includes the purported identifier in the nonce field (Nikander, column 11, lines 4-67).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 5, 6 and 12, claims 19, 20 and 26 and claims 35-38 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,130,614 to

Sreemanthula et al. (hereinafter Sreemanthula) as applied to claim 1, claim 15 and claim 29 respectively above, and further in view of US Patent No. 6,970,459 to Meier.

As to claim 5, Sreemanthula does not expressly mention an identifier as part of the solicitation message. However, in an analogous art, Meier teaches:

- a. Sending a secure router solicitation to one or more access routers, the secure router solicitation including an identifier of the mobile node (the source address (identifier) of the client is included in the solicitation message) (Meier, column 7, lines 19-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the identification information of Meier in order to allow the advertisement to be sent to the correct client that sent the solicitation as suggested by Meier (Meier, column 7, lines 19-25).

Sreemanthula as modified further teaches:

- b. Receiving the secure router advertisement responsive to the router solicitation, the secure router advertisement including the identifier of the mobile node (advertisement message is sent, in response to the solicitation, to the source address of the client) (Meier, column 7, lines 19-25).

As to claim 6, Sreemanthula does not expressly mention a home address as part of the solicitation message. However, in an analogous art, Meier teaches:

- a. Sending a secure router solicitation to one or more access routers, the secure router solicitation including the home address of the mobile node (the source address of the client is included in the solicitation message) (Meier, column 7, lines 19-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the home address of Meier in order to allow the advertisement to be sent to the correct client that sent the solicitation as suggested by Meier (Meier, column 7, lines 19-25).

- b. Receiving the secure router advertisement responsive to the router solicitation, the secure router advertisement including the home address of the mobile node (advertisement message is sent, in response to the solicitation, to the source address of the client) (Meier, column 7, lines 19-25).

As to claim 12, Sreemanthula does not expressly mention a home address as part of the advertisement message. However, in an analogous art, Meier teaches the secure router advertisement includes a nonce field populated with a home address of the mobile node (advertisement message is sent, in response to the solicitation, to the source address of the client) (Meier, column 7, lines 19-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of

Sreemanthula with the home address of Meier in order to allow the advertisement to be sent to the correct client that sent the solicitation as suggested by Meier (Meier, column 7, lines 19-25).

As to claims 19, 20 and 26, the claims are computer program product claims encompassing the limitations of the method claims 5, 6 and 12, respectively and are rejected similarly.

As to claims 35 and 36, 37 and 38, and 44, the claims are system claims encompassing the limitations of the method claims 5 and 6 and 12, respectively and are rejected similarly.

10. Claims 7-11, 13, 21-25, 27, 39-43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,130,614 to Sreemanthula et al. (hereinafter Sreemanthula) as applied to claim 1, claim 15 and claim 29 respectively above, and further in view of US Patent No. 7,155,500 to Nikander.

As to claim 7, Sreemanthula does not expressly mention including public keys in solicitation messages. However, in an analogous art Nikander teaches:

a. Sending a router solicitation to one or more access routers, the secure router solicitation including a public key associated with the mobile node (public key of the soliciting node) (Nikander, column 10, lines 28-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the public key of Nikander in order to increase the security of communications as suggested by Nikander (Nikander, column 10, lines 28-48).

- b. Receiving the secure router advertisement responsive to the router solicitation, the secure router advertisement including the public key (Nikander, column 10, lines 28-48).

As to claim 8, Sreemanthula does not expressly mention the use of digital signatures in the advertisements. However, in an analogous art, Nikander teaches the secure router advertisement includes a signature of an access router associated with an access network, wherein the mobile node may receive one or more messages at an address that belongs to the access network of the access router (signature of the router is part of the advertisement) (Nikander, column 11, lines 5-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the signature authentication of Nikander in order to increase the security of communications as suggested by Nikander (Nikander, column 11, lines 5-61).

As to claim 9, Sreemanthula does not expressly mention the use of digital signatures in the advertisements. However, in an analogous art, Nikander teaches the

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secure router advertisement includes a signature of an access router associated with an access network, wherein a representative of the mobile node may receive one or more messages at an address that belongs to the access network of the access router (signature of the router is part of the advertisement and the mobile node represents itself) (Nikander, column 11, lines 5-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the signature authentication of Nikander in order to increase the security of communications as suggested by Nikander (Nikander, column 11, lines 5-61).

As to claim 10, Sreemanthula does not expressly mention the use of public keys in the generation of addresses. However, in an analogous art Nikander teaches the mobile node is associated with a cryptographically-generated address generated by a public key and the secure router advertisement includes the same public key (address is generated by combining the routing prefix and an interface identifier (Nikander, column 6, lines 40-42), the interface identifier is generated with a public key (Nikander, column 9, lines 12-15) and the public key is in the advertisement (Nikander, column 10, lines 28-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the generation of addresses with a public key of Nikander in order to

increase the security of communications as suggested by Nikander (Nikander, column 7, lines 1-36).

As to claim 11, Sreemanthula does not expressly mention providing an identifier of the mobile node in the advertisement. However, in an analogous art Nikander teaches the secure router advertisement includes a nonce field populated with an identifier of the mobile node (the TA (tentative address) of the mobile node is included in the advertisement from the router) (Nikander, column 11, lines 5-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the inclusion of an identifier of the mobile node in the advertisement of Nikander in order to prevent a denial of service attack as suggested by Nikander (Nikander, column 11, lines 5-67).

As to claim 13, Sreemanthula does not expressly mention a public key in the advertisement. However, in an analogous art, Nikander teaches the secure router advertisement includes a nonce field populated with a public key associated with the mobile node (public key is one of the fields of the advertisement) (Nikander, column 11, lines 5-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the inclusion of a public key in the advertisement of Nikander in

order to prevent a denial of service attack as suggested by Nikander (Nikander, column 11, lines 5-67).

As to claims 21, 22, 23, 24, 25 and 27, the claims are computer program product claims encompassing the limitations of the method claims 7, 8, 9, 10, 11 and 13, respectively and are rejected similarly.

As to claims 39 and 40, 41, 42, 43 and 45, the claims are system claims encompassing the limitations of the method claims 7, 8, 10, 11 and 13, respectively and are rejected similarly.

11. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,130,614 to Sreemanthula et al. (hereinafter Sreemanthula) in view of US Patent No. 7,155,500 to Nikander.

As to claim 47, Sreemanthula teaches:

- a. Receiving an address update from a mobile node, the address update including a secure router advertisement (data from the router advertisement are attached to the registration request) (Sreemanthula, column 11, line 23-column 12, line 65),

Sreemanthula does not expressly mention an identifier in the registration request.

However, in an analogous art, Nikander teaches a purported identifier of the mobile



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node and a purported current address (the tentative address (TA) is the identifier and the TLLA (target link layer address) is the current address) (Nikander, column 11, lines 5-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the mobile network communications of Sreemanthula with the inclusion of a public key in the advertisement of Nikander in order to prevent a denial of service attack as suggested by Nikander (Nikander, column 11, lines 5-67).

Sreemanthula as modified further teaches:

- b. Verifying that the secure router advertisement is signed by an authorized access router (procedure for verifying the signature) (Nikander, column 16, line 1-column 17, line 55).
- c. Verifying that the purported current address is associated with the authorized access router (procedure for verifying the current address) (Nikander, column 16, line 1-column 17, line 55).
- d. Verifying the association between the purported identifier and the purported current address using data from the secure router advertisement (procedure for verifying the identifier) (Nikander, column 16, line 1-column 17, line 55).

As to claim 48, Sreemanthula as modified teaches the mobile node is a Mobile IPv6 mobile node (the embodiments of the patent are used in an IPv6 based environment) (Sreemanthula, column 10 lines 1-2).

As to claim 49, Sreemanthula as modified teaches the address update is a Mobile IPv6 binding update (the embodiments of the patent are used in an IPv6 based environment) (Sreemanthula, column 10 lines 1-2).

As to claim 50, Sreemanthula as modified teaches the purported identifier is a Mobile IPv6 home address (the embodiments of the patent are used in an IPv6 based environment) (Sreemanthula, column 10 lines 1-2).

As to claim 51, Sreemanthula as modified teaches the current address is a Mobile IPv6 care-of address (the embodiments of the patent are used in an IPv6 based environment) (Sreemanthula, column 10 lines 1-2).

As to claim 52, Sreemanthula as modified teaches:

- a. Reading an identifier from the secure router advertisement (procedure for verifying the identifier) (Nikander, column 16, line 1-column 17, line 55).
- b. Verifying that the purported identifier matches the identifier read from the secure router advertisement (procedure for verifying the identifier) (Nikander, column 16, line 1-column 17, line 55).

As to claim 53, Sreemanthula as modified teaches:

- a. Reading a home address from the secure router advertisement (procedure for verifying an address) (Nikander, column 16, line 1-column 17, line 55).
- b. Verifying that the purported identifier matches the home address (procedure for verifying an address) (Nikander, column 16, line 1-column 17, line 55).

As to claim 54, Sreemanthula as modified teaches:

- a. Reading a public key from the secure router advertisement (procedure for verifying a public key) (Nikander, column 16, line 1-column 17, line 55).
- b. Verifying that the same public key was used to generate cryptographically generated address (procedure for verifying a public key) (Nikander, column 16, line 1-column 17, line 55).

As to claim 55, Sreemanthula as modified teaches verifying that the purported current address matches subnet prefix (routing prefix) (Nikander, column 16, line 1-column 17, line 55).

As to claim 56, Sreemanthula as modified teaches verifying that a signature used to sign the secure router advertisement is associated with an access router authorized by certification to advertise a subnet prefix specified in the secure router advertisement

(certificates and signatures are verified) (Nikander, column 16, line 1-column 17, line 55).

As to claims 57-66, the claims are computer program product claims that encompass the limitations of the method claims 47-56 and are similarly rejected.

As to claims 67-76, the claims are system claims that encompass the limitations of the method claims 47-56 and are similarly rejected.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is detailed in USPTO form 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William S. Powers whose telephone number is 751 272 8573. The examiner can normally be reached on m-f 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Zand can be reached on 571 272 3811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



6/22/2007

William S. Powers  
Examiner  
Art Unit 2134



**KAMBIZ ZAND**  
**SUPERVISORY PATENT EXAMINER**